CLAIMS:

1. An apparatus for thin die detachment comprising:

a film having an adhesive surface on which a plurality of dice are mountable;

a collet for holding and detaching a die mounted on the adhesive surface; and

an ejector device comprising a plurality of ejector pins, each ejector pin operative to contact and raise a second surface of the film opposite the adhesive surface at a position substantially at a corner of the die to be detached within a predetermined distance from the edges of said die, whereby to partially delaminate said die from the adhesive surface for detachment by the collet.

2. An apparatus as claimed in claim 1, wherein the predetermined distance is determinable by considering one or more factors in the group consisting of the thickness, size and elastic modulus of the die, the thickness and elastic modulus of the film, the interfacial adhesive strength between the die and the elastic surface of the film and the shape and size of the ejector pin.

3. An apparatus as claimed in claim 1, wherein the predetermined distance is less than 1.2mm from the edges of the die where the die is a silicon die of between 3mm to 8mm in width and less than 0.15mm thickness, the film has a thickness of approximately 0.1mm and an interfacial adhesive strength between the die and the adhesive surface is less than 15 Joules per meter square.

4. An apparatus as claimed in claim 1, wherein the predetermined distance is less than 1.6mm from the edges of the die where the die is a silicon die of greater than 8mm in width and less than 0.15mm thickness, the film has a thickness of approximately 0.1mm and an interfacial adhesive strength between the die and the adhesive surface is less than 15 Joules per meter square.

5. An apparatus as claimed in claim 1, wherein the predetermined distance is less than 0.5mm from the edges of the die where the die is a gallium arsenide die of between 3mm to 8mm in width and less than 0.15mm thickness, the film has a thickness of approximately 0.1mm and an interfacial adhesive strength between the die and the adhesive surface is less than 15 Joules per meter square.

6. An apparatus as claimed in claim 1, including a vacuum ejector platform for supporting a portion of the film on which the die to be detached is mounted while the film is contacted by the ejector device.

7. An apparatus as claimed in claim 6, including apertures corresponding substantially to positions of each corner of the die to be detached, wherein the ejector pins are houseable within the vacuum ejector platform and projectable through said apertures for contacting the die.

8. An apparatus as claimed in claim 1, wherein the ejector device comprises at least four ejector pins, each ejector pin corresponding to a position substantially at a corner of the die.

9. An apparatus as claimed in claim 8, including one or more ejector pins corresponding to a position substantially at a center portion of the die.

10. An apparatus as claimed in claim 1, wherein each ejector pin has an effective support area of at least 1×10^{-4} mm^2.

11. A method of detaching a thin die mounted on an adhesive surface of a film, comprising the steps of:

contacting and raising a second surface of the film opposite the adhesive surface with a plurality of ejector pins at positions substantially at the corners of the die within a predetermined distance from the edges of said die;

pushing against the film at positions substantially at the corners of the die to partially delaminate the die; and

holding the partially-delaminated die and detaching the die from the adhesive surface.

12. A method as claimed in claim 11, including the step of determining the predetermined distance by considering one or more factors in the group consisting of the thickness, size and elastic modulus of the die, the thickness and elastic modulus of the film, the interfacial adhesive strength between the die and the elastic surface of the film and the shape and size of the ejector pin.

13. A method as claimed in claim 11, wherein the predetermined distance is less than 1.2mm from the edges of the die where the die is a silicon die of between 3mm to 8mm in width and less than 0.15mm thickness, the film has a thickness of approximately 0.1mm and an interfacial adhesive strength between the die and the adhesive surface is less than 15 Joules per meter square.

14. A method as claimed in claim 11, wherein the predetermined distance is less than 1.6mm from the edges of the die where the die is a silicon die of greater than 8mm in width and less than 0.15mm thickness, the film has a thickness of approximately 0.1mm and an interfacial adhesive strength between the die and the adhesive surface is less than 15 Joules per meter square.

15. A method as claimed in claim 11, wherein the predetermined distance is less than 0.6mm from the edges of the die where the die is a gallium arsenide die of between 3mm to 8mm in width and less than 0.15mm thickness, the film has a thickness of approximately 0.1mm and an interfacial adhesive strength between the die and the adhesive surface is less than 15 Joules per meter square.

16. A method as claimed in claim 11, including generating a vacuum in a vacuum ejector platform to support a portion of the film on the second surface

of the film which the die to be detached is mounted while contacting the film with the ejector pins.

17. A method as claimed in claim 16, further including raising the ejector pins from within the vacuum ejector platform through apertures formed thereon to the film at positions substantially at the corners of the die.

18. A method as claimed in claim 11, wherein the ejector device comprises at least four ejector pins, each ejector pin contacting the die substantially at a separate corner of the die.

19. A method as claimed in claim 18, including one or more ejector pins to separately contact substantially a center portion of the die.

20. A method as claimed in claim 11, wherein each ejector pin has an effective support area of at least 1×10^{-4} mm^2.